Power Levels into IFD

ABSTRACT

We use CW generated by the RF Generator to inject test signals for calibration and diagnostics. CW can vary by 103dB (from 0 to 103dB attenuation) to simulate the full dynamic range of our receiver. We need this CW to go into saturation so we can see the 1dB compression point. For SIGMET's IFD, this occurs at an input power of approximately 12dBm (power into the IFD, using statistical linearization to extend the linear range). This means that ideally our test signal would go 5-6dB above this to account for site variations to ensure we always see the 1dB compression point.

The SIGMET IFD is designed to handle these high input levels, but there is a maximum. Damage is probable at an input power of 27dBm into the IFD. With the current test paths, our test signals can reach the following levels (on average):

Source	Front End	Cabinet
CW	24.53	5.35
RFD	24.82	5.64
KD	-0.43	-19.62
Noise	1.91	-17.27

This means that the CW and RFD test sources can reach dangerously close to damaging the IFD. These values are averages, so roughly half the RDA sites will have a higher power level than this.

To alleviate this, we are adding a 10dB attenuator to the Front End Path.

Continued next week.